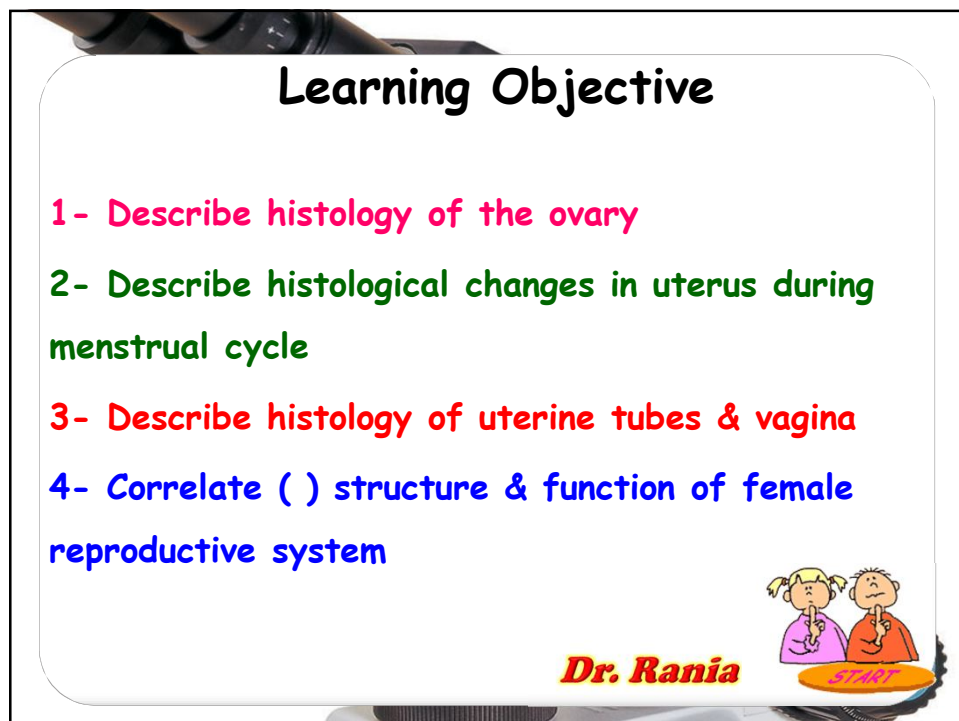




Ovary

Dr. Rania

Ovary is consisted of 3 layers

1- Capsule (tunica albuginea):

Formed of

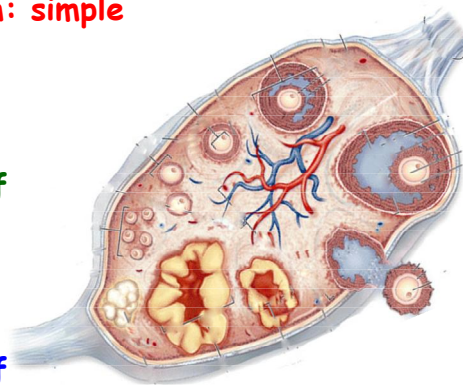
- Germinal epithelium: simple cuboidal
- Dense CT

2- Cortex: formed of

- Cellular CT
- Ovarian follicles

3- Medulla formed of

- Loose connective tissue
- Blood vessels



Dr. Rania

Ovarian follicles:

Oocyte surrounded by follicular cells

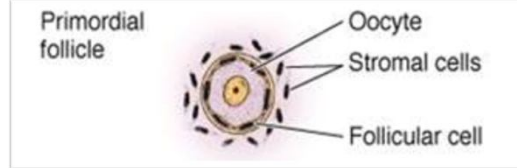
Primordial follicles: consisted of

1ry oocyte arrested in prophase of 1st meiotic division

Surrounded by

Follicular cells: 1 layer, flat cells

Basal lamina: surround follicular cells



Growing follicles (1ry): under effect of FSH

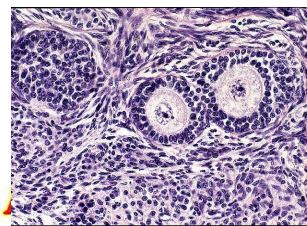
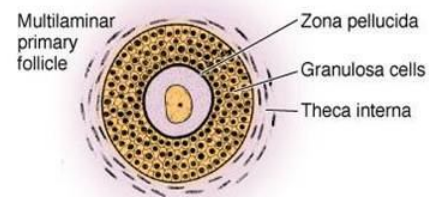
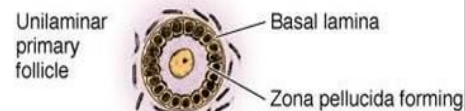
1ry oocyte: enlarge

↑↑↑mitochondria, ↑↑↑ER, Golgi enlarge

Zona pellucida: glycoproteins secreted by oocyte surround oocyte

Follicular (granulosa) cells: becomes cuboidal and consisted of several layers-stratified

Basal lamina: surround follicular cells



2ry (antral) follicles:

In Growing follicle the Granulosa cells secrete follicular fluid.

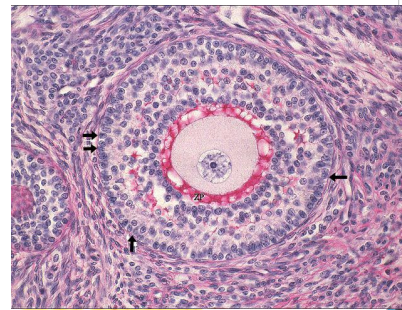
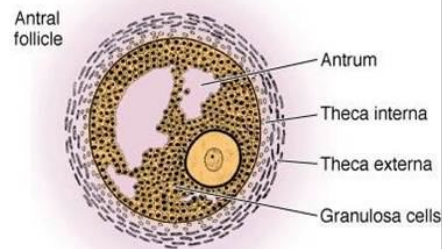
Antrum (cavity) filled with follicular fluid

Fluid contains hyaluronate, growth factors, plasminogen, fibrinogen, heparan sulfate, steroids

The surrounding stroma of the ovary forms follicular theca which differentiates into

Theca interna: cells secrete androstendione

Theca externa: smooth muscle & fibroblasts



Graafian follicle: 20-30mm consisted of

Iry oocyte surrounded by zona pellucida

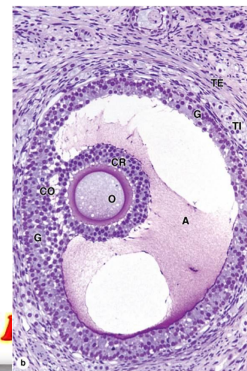
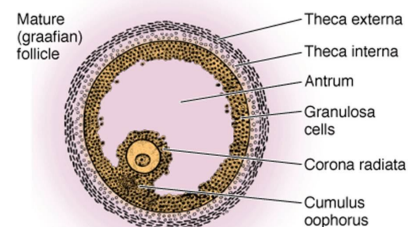
Granulosa cells become thinner, secrete follicular fluid.

Granulosa divided into:

1. Granulosa cells lining the graffian follicle
2. Corona radiata: surround oocyte
3. Cumulus oophorus: link oocyte with granulosa

Surrounding Theca interna & Theca externa

Other follicles undergo atresia



Dr. A

Ovulation: events (LH surge)

Mature follicle project through tunica albuginae

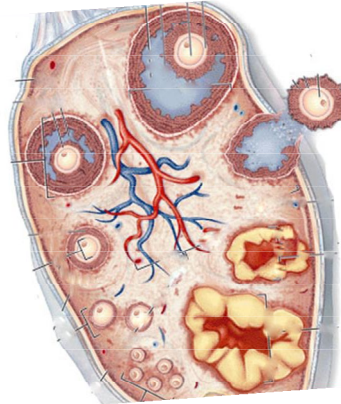
Stigma in tunica albuginae: ischemic area in tunica albuginae due to compression of mature graffian follicle

↑↑↑ intrafollicular pressure

Contraction theca externa

Just before ovulation the 1ry oocyte: complete 1st meiotic division to give 2ry oocyte & 1st polar body

2ry oocyte start 2nd meiotic division and arrested in metaphase



Results of ovulation:

2ry oocyte + zona pellucida + corona radiata + some cumulus oophorus expelled to the uterine tube

Corpus luteum remains in the ovary

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Corpus luteum

Corpus hemorrhagicum firstly formed as follow Granulosa, theca: collapse & fold

Lumen become filled with blood clot

Granulosa: from granulosa lutein cells

Theca: from theca lutein cells

Cells secrete more progesterone under effect of LH for 10-12 day

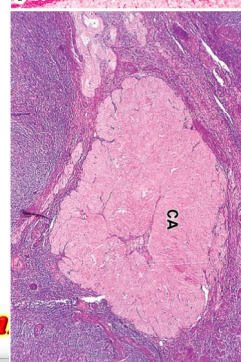
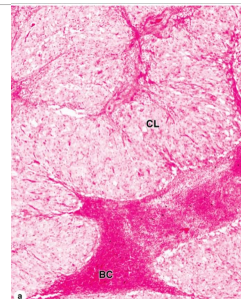
Corpus luteum of menstruation

Cells stop secretion. ↓↓progesterone:

Fibroblast invade corpus luteum to form Corpus albican

Corpus luteum of pregnancy function for 4-5 months

Under effect of human chorionic gonadotrophin secreted by trophoblasts



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Uterine Tubes

Dr. Rania

The wall is consisted of:

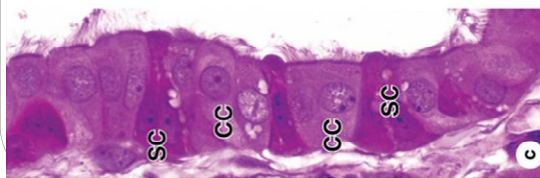
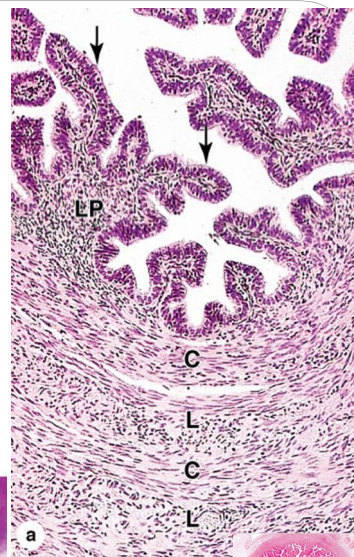
1- Mucosa: Branches & folds
Except intramural part

Epithelium: simple columnar
ciliated, Peg cells: dark secretory
cells

Lamina propria: loose areolar CT

2- Muscular: interwoven Circular
and longitudinal smooth muscle
fibers

3- Serosa: CT, Covered by
peritoneum with mesothelium



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Uterus

Dr. Rania

The wall of the uterus is consisted of:

1- Endometrium:

Covered by Simple columnar ciliated epithelium contains Secretory cell

Lamina propria:

Consisted of connective tissue contains blood ves, collagen, ground substance, Uterine glands

2- Myometrium: thickest

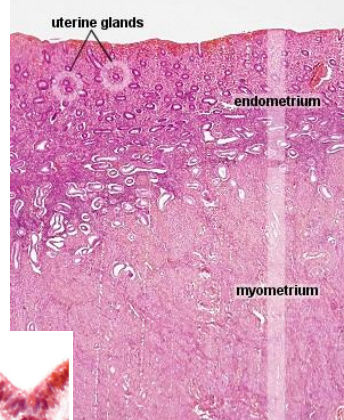
Smooth ms fibers: 4layers

inner & outer longitudinal, middle circular

Perimetrium:

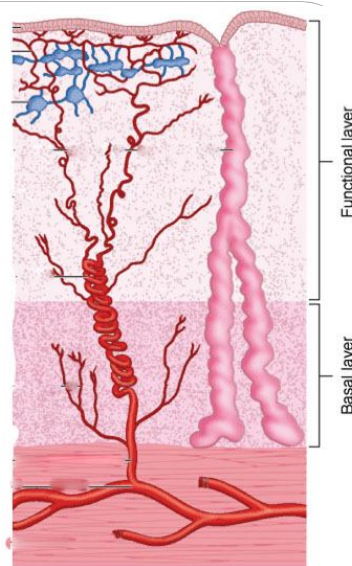
Connective tissue covered with mesothelium

Uterus H&E proliferative phase



Endometrium: is divided into

- 1- Functional layer: characterized by
 - Less cellular lamina propria
 - More ground substance
 - Uterine glands (main part)
 - Covered by Surface epithelium
- 2- Basal layer: characterized by
 - Close to myometrium
 - Highly cellular lamina propria
 - Basal part of uterine glands

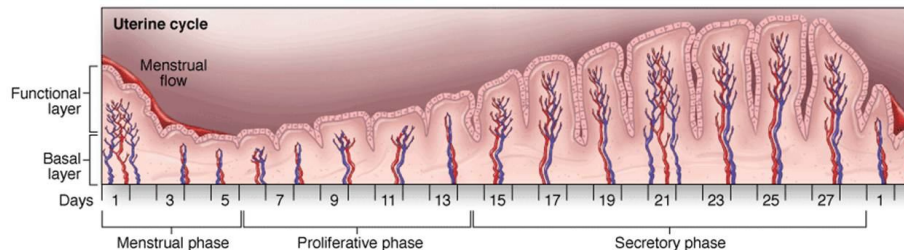


- Arcuate arteries send:
- Straight arteries :basal layer
 - Spiral arteries: functional layer
 - End in vascular lacunae
 - Spiral arteries are progesterone sensitive

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Menstrual cycle:

- From puberty----45 last for 28 days
- Pituitary hormones ⇌⇌⇌ Ovary ⇌⇌⇌ Uterus
- Is divided into 3 phases
- Day one: day when menstrual bleeding appears.
- The menstrual discharge consists of degenerating endometrium mixed with blood from its ruptured blood vessels.



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1- Menstrual phase: due

to Atrophy of corpus luteum, drop of progesterone, last for 3-4d

Spasm of spiral arteries

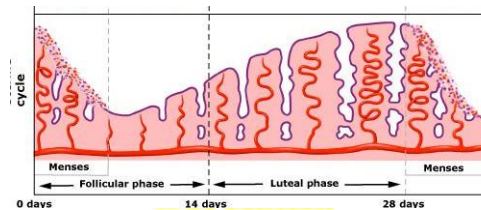
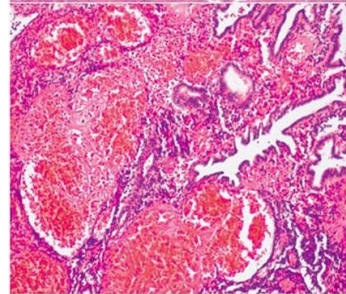
↑↑↑ endothelial prostaglandins:
vasoconstriction, ischemia

Cytokines: ↑↑↑ vascular permeability

Leukocytes migration

Detachment of functional layer of endometrium

Menstrual flow



Proliferative phase: under effect of Estrogen from growing follicles

It lasts for 8-10 ds

Epithelium from basal layer proliferate & migrate to cover surface

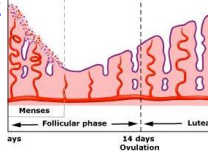
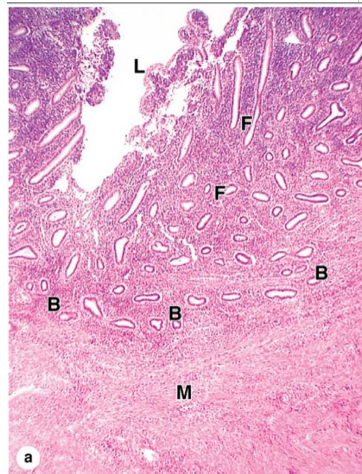
Surface epithelium: simple columnar ciliated

Uterine glands becomes straight tubules with narrow empty lumen

Spiral arteries: lengthen

More ground substance

2-3 mm thick



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Secretory (luteal) phase:

under effect of Progesterone from corpus luteum. It lasts for 14 d

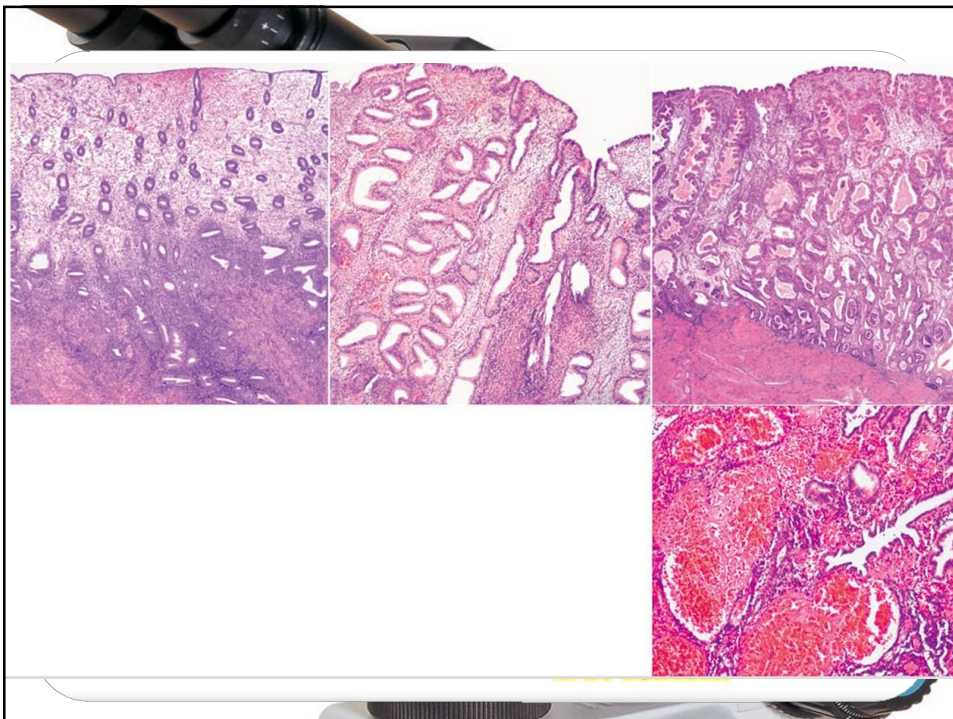
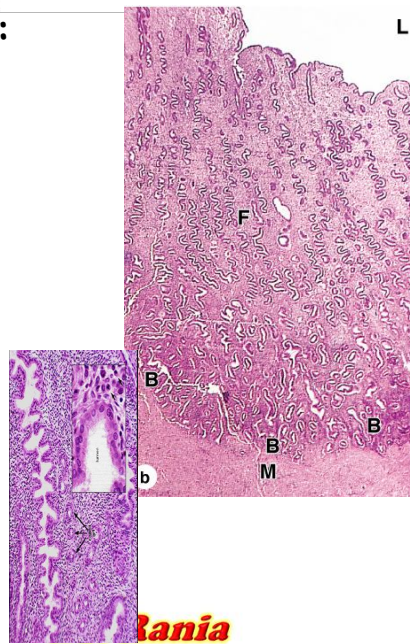
Surface epithelium: ↑↑↑glycogen

Uterine glands become coiled tubules, ↑↑↑secretion (glycogen & glycoproteins) (saw toothed appearance)

Spiral arteries: long, thin wall, blood filled lacunae in superficial layer

Stroma: edema due to ↑↑↑ground substance

5 mm thick



Cervix consisted of

1- Mucosa

Endocervical: Simple columnar

Close to external os: Transitional zone

Part inside vagina: Stratified squamous epithelium

Cervical glands: mucous

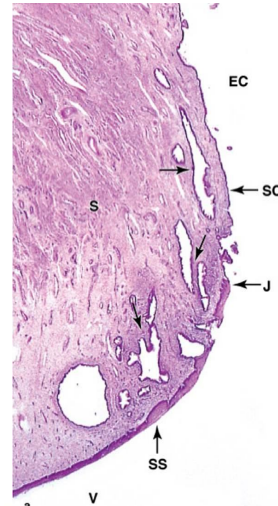
2- Deep layers: dense connective tissue with few smooth muscle fibers

Cervical secretion

At ovulation: thin, watery

At luteal ph.: thick viscid

At pregnancy: Form cervical plug



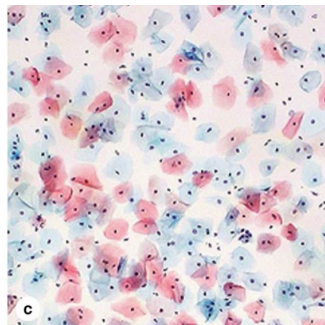
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Cervix

Cervical (pap) smear

Swap from junctional area by Brush

Dysplasia is precancerous



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Vagina

Dr. Rania

The vaginal wall is consisted of 3 layers:

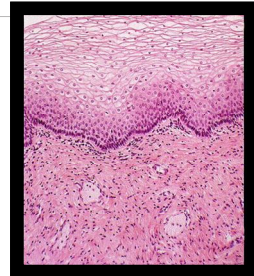
1- Mucosa

Stratified squamous nonkeratinized

Contains glycogen under effect of estrogen

Bacteria convert glycogen to lactic acid (protect from microorganisms)

Lamina propria: Form papillary projections and contains Elastic fibers, lymphocytes, neutrophil



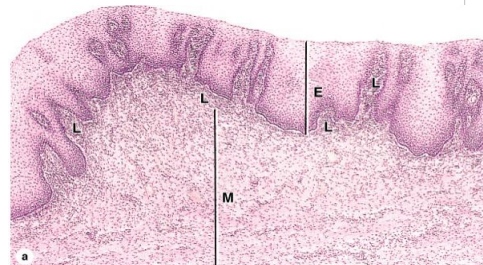
2- Muscle layer : consisted of Inner circular and Outer longitudinal smooth muscle fibers

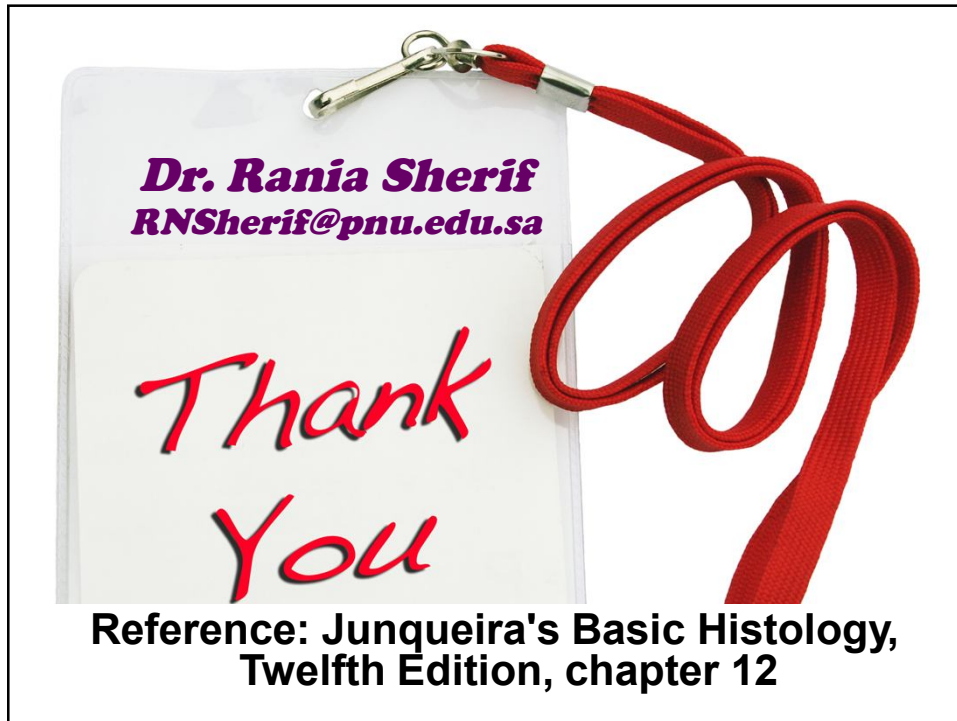
3- Adventitia: consisted of

Dense connective tissue

Elastic fibers

Nerves, lymphatics





Reference: Junqueira's Basic Histology,
Twelfth Edition, chapter 12